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Nota di contenuto	Cover; Title Page; Copyright; Preface; Contents; Figures; Summary; Acknowledgments; Abbreviations; CHAPTER ONE: Introduction; Electricity Infrastructure in the United States; The Supply of Electricity; The Demand for Electricity; Regulation in the Electricity Market; Key Issues and Challenges with the Current Grid; Demand Risk; Differences in Wholesale and Retail Prices; Integration of Renewable Sources of Energy; Using Technology to Overcome Problems: The Smart Grid; Research Questions; Approach; Organization of This Report; CHAPTER TWO: A Review of the Potential Benefits of the Smart Grid Potential Benefits to Generators and Suppliers Potential Benefits to Distributors and Utilities; Potential Benefits to Consumers; Potential Benefits to All Market Participants and Society at Large; Total Potential Benefits of the Smart Grid; CHAPTER THREE: Potential for Entrepreneurship with Smart-Grid Technologies: Opportunities and Challenges Leveraging Big Data; Description of Electricity Big Data; The Disaggregation Problem; Hardware Solutions; Software Solutions; Issues in Disaggregation; The Economic Value of Disaggregated Data;

Consumers; Utilities and Policy
Benefits Outside of the Electricity Market Business Opportunities from Smart-Grid Data; Energy-Efficiency Ventures; Data Refinement; CHAPTER FOUR: The Smart Grid in Practice: Some Empirical Evidence; Response of Consumers to Alternative Pricing Structures; Pilot Programs; Large-Scale Studies; Negative Consumer Experiences and Concerns; Selected Issues and Experiences with the Smart Grid: Brief Case Studies; Smart Grid City: Boulder, Colorado; Massachusetts Electric Grid Modernization Process; Summary of Empirical Evidence CHAPTER FIVE: Explaining the Evidence: Barriers to Smart-Grid Technology Adoption Regulatory Incentives on the Supply Side; Lack of Technology Standards; Perceived Costs to Consumers; Real-Time and Time-of-Use Pricing and Transaction Costs; Privacy and Health Risks; Big-Data Technological and Personnel Barriers; Costs of Interstate Transmission Infrastructure; Costs of Distributed Generation; Total Potential Costs of the Smart Grid; CHAPTER SIX: Using Public Policy to Encourage Smart-Grid Technology Adoption; Policy Levers to Incentivize Smart-Grid Investment; Mandate Smart-Grid Investments Commit to Inclusion of Smart-Grid Investments in Rate Base Increase the Allowable Rate of Return on Capital; Change the Distribution of Investment Expenditure and Cost Savings Pass-Through to Consumers; Decouple Revenue from Sales; Change Procedures for Rate Cases; Broad Principles for Smart-Grid Regulation; Shift Regulatory Focus from Costs of Investment to Net Benefits of Investment; Adapt Pricing Structures to New Technologies; Develop Efficient Pricing Policies for Distributed Generation; Create and Enforce Smart-Grid Standards; Recognize Differences in Local Electric Systems
Manage Consumer Expectations

Sommario/riassunto

RAND Corporation researchers review the current technical, regulatory, and economic context of the electricity market and theoretical benefits of developing a smart grid; discuss some entrepreneurial opportunities associated with smart-grid data; examine empirical evidence related to smart-grid adoption and implementation; and offer policy suggestions for overcoming identified barriers.